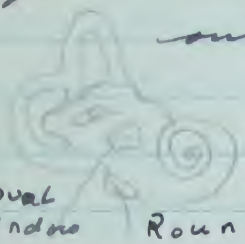
3. Cochlea – Inner ear & contains essential organ of hearing – contained in spiral-shaped chamber or passage tunnelled out of skull-bone. Spiral makes 2½ turns.



Within this twisted bony canal is a tube of membrane which follows the turns of the tunnel in the bone & fits it closely. 2 membranous partitions divide interior of original coiled tube. – lengthwise in 3. All 3 cavities are filled with fluid.

(A) Stairway of vestibule (scala vestibuli)
(B) Middle stairway (" media)
(C) Stairway of mid ear drum (" tympani)

Stairway of vestibule communicates with mid ear through oval window.

Delicate membranous partition separating mid stairway from stairway tympanum is called <u>basilar membrane</u>. Upon it rest the sensitive nerve cells & nerve fibers essential for hearing. This collection of cells is known as the Organ of Corti.

Nerve of Hearing – Auditory enters the central long column of ~~the~~ cochlea & leads into branches which pass along basilar membranes. Each hair receives a very fine nerve twig.

4. Semicircular Canals – Inner ear contains organ which consists of a set of 3 sickle-shaped tubes.

They are filled with fluid. To these canals we owe the ability to maintain balance of our bodies when we are sitting, walking etc — Also it enables us to know the direction in which our bodies are moving — even though our eyes are closed or blindfolded — The 3 canals are at rt ∠s to one another.

When head & body move in any dimension up & down — side to side — fluid within corresponding canal is given a very slight swishing motion — This moves a tiny bone perched upon a no. of bristle like processes. Bristles arise from sensitive cells — supplied with nerve twigs — branches of Vestibular Nerve.

Movements of pebble like bone cause stimulation of sensitive cells & creation of nerve impulses — which brain interpret in its own way as changes in body's position. Upon the receipt of impulses from semicircular canals the cerebellum sends messages to those various muscles of neck, trunk, etc. — which are concerned with maintaining posture of body.

Sensation of Taste.

Substances must first be dissolved — if a solid material is placed in a perfectly dry mouth it cannot be tasted.

Organs of Taste — these are chiefly on the tongue, but soft palate, tonsils & epiglottis contain a few.

Papillae are minute projections of the tongue each is surrounded by a groove and beyond this by a ridge. Embedded in the covering of the small papillae are small collections of slender cells packed side by side in bundles. These are the cells of taste — bundles which they compose are called taste buds. Taste buds open upon surface of papillae by tiny pores. Substances in solution enter these pores of taste buds and stimulate hair-like ends of cells within.

Taste Sensations — there are only five — sweet, bitter, sour, alkaline and salty. All other tastes are a blending of these 5 in different proportions — sweet — top of tongue.

salty — " " "

sour — sides " "

Bitter — back & in throat.

Sensation of Smell.

In some animals it is almost incredibly acute — a chemical sense.

We smell by means of 3 small bones springing from outer walls of nose — the nasal mucous membrane is raised into 3 ridges or hammocks. These divide each ½ of nose into 4 chambers or passages — one above the other from front to back.

In breathing — air streams through the lower 3 passages — but not this upper most one.

Smell Organs are situated in the mucous membrane of upper passage. Substances are carried there in gaseous form with the air we breathe.

Olfactory cells — receptors for smell — oblong cells with plump rounded nuclei embedded in mucous membrane of uppermost passage of nose. Each cell has a long thread of protaplasm which passes outward to mucous membrane. From the outer end of the cell a delicate nerve fibre proceeds upward & passing thro' floor of skull end in Olfactory lobe of skull.

Disease wiped out will develope normal individual. Health is normal.

All types of Bacteria have effect. Some necessary in order to produce everyday food, as cheese.

Pathogenic - (disease producing). Called germs. Some grow like plants - some split, some produce strong poison which they radiating from themselves into our blood stream. Localized infection - boils - Staphococcus infection. May get beyond bounds & go thro' body i.e. similar infection all over body. Infectious from one person to another.

Get diseases by breathing (respiratory - colds influenza, pneumonia, measles, scarlet fever etc) By eating - typhoid, poisonous - Germ lies in intestinal tract. By carrying - handling food when carrying germ - breeds in milk.

Intermediary Host - Bitten by animal which has germs. Rats & mice transfer disease.

Sometimes by indirect contact — i.e. pencil.

Natural Immunity -

Racial Immunity -

Artificial " - by vaccination

When some foreign chemical is placed in blood i.e. toxin injected — the blood sets up chemical reaction to these elements. In some cases it means stuff that piles up on top of each other — "flocculation". Also when blood of 2 types are mixed.

Chemical reaction may not be as obvious. A overcoming toxin produces in blood a toxin capable of neutralizing toxin of disease. Influenza, pneumonia produces powerful toxin but body doesn't build up toxin to overcome it — ∴ can get it again.

Animals injected by germs or poisons produced by bacteria or dead bacteria over period of time. Make them immune. Take blood serum & then inject it to diseased animals & immunize them.

Toxin — mixture of neutralizing toxin & dead bacteria — completely harmless — 6 mos & 2 yrs. (given & kids)

Asepsis — Prevent germs.

Anti- " — Kill " .

Disinfectant — kills germs & tissues. Antiseptic — weak germicide. Discourages germs & grow — don't kill germs.

Through gas — fumigating. Kills germs & insects pests.

✓

Physiology Test L. Creighton.

1, The central nervous system is made up of the brain and spinal cord. There are several parts of the brain:-

1. The cerebrum - the largest portion; convoluted, folded and divided into two hemispheres - the right & left cerebral hemispheres. The cerebrum is made up of the frontal, temporal, occipital and parietal lobes. It is:-

① The centre of thinking, memory, knowledge, etc.
② " " " voluntary muscular movements.
③ " " " reflex action of some parts of the body.
④ Registers sensations.
⑤ Transmits messages to & from the cortex.

The cerebrum contains grey matter (cortex) made up of the nerve cells which is on the outside & a white mass of nerve fibres inside.

2. The medulla of the brain controls the vital organs of the body - heart, lungs, stomach, etc.

3. The cerebellum of the brain is sometimes called the lesser brain & is situated below the occipital lobe of cerebrum. It:-

① Enables the body to maintain poise & equilibrium
② Keeps muscles in normal tension.
③ Allows " to act with precision.
④ Enables body to " rhythmically.

4. The spinal cord extending from the medulla to the top of the lumbar vertebrae is located inside the spinal column.

140

The inner portion of it contains the grey matter made up of nerve cells & the outer portion is the matter of nerve fibers. The grey matter is in the shape of a butterfly with the ventral portion longer than the dorsal. From the nerve cells of the spinal cord two fibers emerge - the dorsal fiber or afferent leading into the nerve cell & the ventral or efferent leading out. These two fibers unite outside the spinal cord & form a mixed nerve. Nerves are made up of bundles of thousands of nerve fibers held to-gether by a myelin sheath.

Each nerve cell has coming from it fibers — dendrites and axones. The dendrites lead into the cell & the axone away from it. The cell bodies & fibers make up a nerve — the dendrites come in contact with the axones but do not touch. This opposition is called synapse.

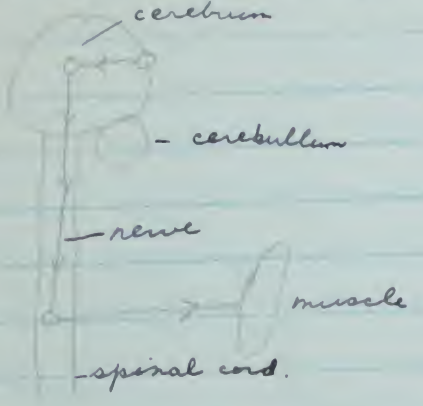
The spinal cord is:

① the center of reflex action.

② transmits messages to & from the brain.

A ganglion is a collection of afferent nerve cells. The sympathic nervous system is connected to the brain by both afferent & efferent nerves & is located along both sides of spinal cord as a chain of nerve cells.

II Conditioned Reflex.



Inherent Reflex.

In learning anything the afferent nerves must travel to the cerebrum to be thought about & thence down to the muscle to be moved thro' the spinal cord by efferent nerves. After a thing has been learned the stimulus does not go to the cerebrum but merely travels to the muscle by the efferent nerves thro' the spinal cord. This is a conditioned reflex.

Inborn reflexes are not transmitted to the brain at all. They merely travel by the afferent nerves to the spinal cord & back to the muscle to be moved by the efferent.

III Mental hygiene is of great importance as the nervous system is easily upset often causing mental defects. The behaviour of a person is regulated by the brain therefore before criticizing a person, everyone should have

a thorough understanding of mental hygiene.

A fall on the head even though slight may cause an injury to the brain which may be hard to detect at 1st but will result in paralysis of a part of the body which the injured part controls. Concussion may cause anything from seeing stars to death.

Some people are born with insufficient nervous system - these people are usually idiots - others are born with malfunctioning nervous system which cause them to be mentally defective.

Everyone should know how to take care of the nervous system by having adequate sleep & rest, by eating a diet sufficient in vitamins — a lack of vitamin B causes beriberi which is a disease of the nervous system. Alcoholic drinks kill the nerve cells & pathways thro' the brain — it may cause paralysis & mental defects. Also too much smoking & caffine break down the nerve cells. Regular habits are imp. Worry is very bad, many illnesses are partly mental and are caused by worry.

Therefore to have an understanding of yourself and other people mental hygiene is necessary.